selecting an encoding scheme for each of said call segments based on said corresponding encoding requirement.

AB

36. (Amended) The method of claim 35, further comprising the step of adjusting the encoding scheme selected for one or more of said call segments over time in response to the current needs of a given transaction being performed by said application.

37. The method of claim 35, wherein said application is a voice mail application and said selected encoding scheme is selected to record messages in a compressed format.

38. The method of claim 35, wherein said application is an interactive voice response (IVR) application and said selected encoding scheme provides improved quality for the calling party to IVR half-circuit when the IVR is performing speech recognition.

39. The method of claim 35, wherein said application is an interactive voice response (IVR) application and said selected encoding scheme provides higher compression for the calling party to IVR half-circuit when the IVR is recording a message.

40. The method of claim 35, wherein said application is a signal processing application and a new encoding scheme is selected for an adjustment to the volume of said connection.

41. The method of claim 35, wherein said application is a signal processing application and a new encoding scheme is selected for adjustment to the speed of said connection.

REMARKS

The present application was filed on February 14, 2001 with claims 1 through 41. Claims 1 through 41 are presently pending in the above-identified patent application.

In the Office Action, the Examiner rejected Claims 35-41 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Examiner also rejected Claims 2- 6 and 11- 15 under 35 U.S.C. § 112,

second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner rejected Claims 1 and 7- 9 under 35 U.S.C. § 102(b) as being anticipated by Sharma et al. (U.S. Patent No. 5,546,395), rejected Claims 2- 5 under 35 U.S.C. § 103(a) as being unpatentable over Sharma et al. in view of Javitt (U.S. Patent No. 5,926,483), and rejected Claim 6 under 35 U.S.C. § 103(a) as being unpatentable over Sharma et al. in view of Lynn (U.S. Patent No. 5,070,527).

The present invention is directed to a network monitoring agent that monitors network conditions, such as traffic volume, and determines when to dynamically adjust the encoding scheme for one or more connections. The network monitoring agent can select an encoding standard based on, for example, current network traffic volume, network error characteristics, time of day or day of week. In the illustrative network traffic implementation, an encoding standard that provides a lower degree of compression and a higher quality level is selected at times of lighter network traffic. Likewise, as network traffic increases, an encoding standard that provides a higher degree of compression, although at a lower quality level, is selected in order to maximize the network utilization.

Figure 6 has been amended, as indicated on the attached copy of marked-up Figure 6, to indicate the proper step numbers (610, 630 and 660), as indicated in the specification on page 10, line 25. No new matter has been introduced. Applicants respectfully request entry of the amended figure.

Section 112 Rejections

Claims 35-41 were rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 2- 6 and 11- 15 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claims 35-41, the Examiner asserts claims 35-41 are ambiguous in light of the specification due to the use of the word "segment," since the specification discusses voicemail segment, half-circuit segments and bridges (that bridge call segments). Claim 35 has been amended to emphasize that call segments between the calling party and the application is intended.

The Examiner also rejected Claims 2- 6 and 11- 15 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner asserts that "there is no antecedent basis for "said predefined condition." Claims 2-6, 11-15, 35 and 36 have been amended to provide proper

antecedent basis for the term "predefined condition," in compliance with Section 112. Applicant believes that these amendments address the Examiner's concerns under Section 112, first and second paragraphs, and respectfully request that both rejections under Section 112 be withdrawn.

Independent Claims 1, 10, 19 and 27

The Examiner rejected independent claim 1 under 35 U.S.C. § 102(b) as being anticipated by Sharma et al. (U.S. Patent No. 5,546,395). The Examiner also noted that independent claims 10 and 19 mirror method claim 1 and would be rejected similarly. Applicants note that the Examiner did not address Claims 27-34. Independent Claim 27, however, also mirrors method claim 1 and is addressed in the following argument.

Regarding independent Claim 1, the Examiner asserts that Sharma et al. teaches "a method for dynamically adjusting the bandwidth (Col. 1, line 67, to Col. 2, line 4) comprising the steps of selecting an encoding scheme note compressions scheme (Col. 1, lines 52- 57 and Col. 2, lines 21-24), monitoring one or more conditions on the network (inherent) and selecting a new encoding scheme (Col. 2, lines 21- 22)."

Applicants note that Sharma is directed to a voice over data modem that simultaneously transmits voice and data to a remote site. The voice over data function dynamically allocates bandwidth depending on the "demands of the voice grade digitized signal and the modulation speed of the communication link between the two sites." Col. 1, line 65, to Col. 2, line 4. Sharma is limited to bandwidth allocation for a single communications connection, or link, between two sites for a ***single application***, namely, a voice compression algorithm. See, e.g., Abstract and Title (Dynamic Selection of Compression Rate for a Voice Compression Algorithm in a Voice Over Data Modem).

Independent claims 1, 10, 19 and 27 have been amended to emphasize that the selection of an encoding scheme is application dependent. Support for this amendment is set forth, for example, at page 4, lines 12-14. Thus, Sharma does not disclose or suggest "selecting at least one encoding scheme for at least one of said connections during a call set-up phase based upon encoding requirements of said application associated with said at least one connection, each of said applications having a different encoding requirement," as required by independent Claims 1, 10, 19, and 27.

Independent Claim 35

Similarly, claim 35, as originally presented requires the step of "establishing said connection, wherein said connection has a plurality of call segments between said calling party and said application, each of said call segments having a different encoding requirement; and selecting an

encoding scheme for each of said call segments based on said corresponding encoding requirement." The Examiner did not address claim 35 in the prior art rejections.

Sharma is limited to bandwidth allocation for a single communications connection, or link, between two sites for a single application, namely, a voice compression algorithm. See, e.g., Abstract and Title (Dynamic Selection of Compression Rate for a Voice Compression Algorithm in a Voice Over Data Modem). Sharma does not disclose or suggest that each connection has a plurality of call segments each having a different encoding requirement; and that an encoding scheme is selected for each of the call segments based on the corresponding encoding requirement, as required by claim 35.

Additional Cited References

Javitt was cited by the Examiner in rejecting Claims 2- 5 for its disclosure that Javitt teaches the "monitoring of traffic." Javitt is directed to communication systems providing compression of voice and image communications. Javitt does not disclose or suggest selecting a different encoding scheme based on encoding requirements of a plurality of applications or call segments, as required by each of the independent claims of the present application.

Lynn was cited by the Examiner in rejecting Claim 6 for its disclosure that Lynn teaches a "predetermined time threshold." Lynn is directed to "an audio compression system wherein the compression threshold may be adjusted to a calibrated level. The audio compression system is utilizable in a receiver system wherein an audio input signal received by the receiver system via a communications channel is applied to conditioning circuitry. The conditioning circuitry, in turn, provides a conditioned input signal to an acoustic transducer element for generating a corresponding audio output signal." See, Abstract. Lynn does not disclose or suggest selecting a different encoding scheme based on encoding requirements of a plurality of applications or call segments, as required by each of the independent claims of the present application.

Dependent Claims 2-9, 11-18, 20-26 and 28-41

Dependent Claims 2-9, 11-18, 20-26 and 28-41 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sharma et al., alone or in combination with Javitt or Lynn. Claims 2-9, 11-18, 20-26 and 28-41 are dependent on Claim 1, 10, 19, or 27, respectively, and are therefore patentably distinguished over Sharma et al., Javitt, and Lynn (alone or in any combination) because of their dependency from amended independent Claims 1, 10, 19, and 27, for the reasons set forth above, as well as other elements this claim adds in combination to its base claim. For example, claims 7, 16, 25,

33 and 38 require that an "encoding scheme is independently selected for each half-circuit associated with said at least one of connections." This asymmetric selection of an encoding scheme is not disclosed or suggested by Sharma et al., Javitt or Lynn.

All of the pending claims, i.e., Claims 1-22, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

Respectfully submitted,

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Date: March 5, 2003

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VERSION MARKED TO SHOW ALL CHANGES

IN THE DRAWINGS:

Please amend Figure 6, as indicated on the attached copy of marked-up Figure 6, to indicate the appropriate step numbers, as mentioned in the detailed description. No new matter has been introduced.

IN THE SPECIFICATION:

Please amend the paragraph beginning at page 10, line 7, as indicated below:

The network monitoring agent 300 needs to determine which is the common codec that both sending and receiving ends can use. If both end points are under control of the network monitoring agent 300 then the network monitoring agent 300 has the information as to which codecs are supported by each endpoint recorded in the endpoint database 500 (FIG. 5). Otherwise, the network monitoring agent 300 needs to cooperate with another foreign network monitoring agent [network monitoring agent] 300 or similar system to negotiate for a new codec.

IN THE CLAIMS:

Please amend the claims as indicated below:

1. (Amended) A method for dynamically adjusting the bandwidth utilized by a plurality of applications, each of said applications communicating with an endpoint over a connection in a network, said method comprising the steps of:

selecting [an] at least one encoding scheme for at least one of said connections during a call set-up phase based upon an encoding requirement of said application associated with said at least one connection, each of said applications having a different encoding requirement;

monitoring one or more conditions on said network during said at least one connection; and

selecting a new encoding scheme for said at least one connection if one or more conditions have occurred.

2. (Amended) The method of claim 1, wherein said [predefined] one or more conditions include [is] a predefined network traffic level.

3. The method of claim 2, wherein an encoding standard that provides a lower degree of compression is selected at times of lighter network traffic.

4. The method of claim 2, wherein an encoding standard that provides a higher degree of compression is selected as network traffic increases.

5. (Amended) The method of claim 1, wherein said [predefined] one or more conditions include [is] a predefined network error characteristic and an encoding scheme is selected that performs well under the observed network error characteristic.

6. (Amended) The method of claim 1, wherein said [predefined] one or more conditions include [is] a predefined time period.

7. The method of claim 1, wherein an encoding scheme is independently selected for each half-circuit associated with said at least one of connections.

8. The method of claim 1, further comprising the step of notifying at least one of the devices associated with a connection of said change in the encoding scheme.

9. The method of claim 8, further comprising the step of inserting a notification in a packet header indicating that subsequent packets will be encoded with a different specified encoding algorithm.

10. (Amended) A system for dynamically adjusting the bandwidth utilized by a plurality of applications, each of said applications communicating with an endpoint over a connection in a network, said system comprising [the steps of]:

a memory for storing computer-readable code; and

a processor operatively coupled to said memory, said processor configured to:

select [an] at least one encoding scheme for at least one of said connections during a call set-up phase based upon an encoding requirement of said application associated with said at least one connection, each of said applications having a different encoding requirement;

monitor one or more conditions on said network during said at least one connection; and

select a new encoding scheme for said at least one connection if one or more conditions have occurred.

11. (Amended) The system of claim 10, wherein said [predefined] one or more conditions include [is] a predefined network traffic level.

12. The system of claim 11, wherein an encoding standard that provides a lower degree of compression is selected at times of lighter network traffic.

13. The system of claim 11, wherein an encoding standard that provides a higher degree of compression is selected as network traffic increases.

14. (Amended) The system of claim 10, wherein said [predefined] one or more conditions include [is] a predefined network error characteristic and an encoding scheme is selected that performs well under the observed network error characteristic.

15. (Amended) The system of claim 10, wherein said [predefined] one or more conditions include [is] a predefined time period.

16. The system of claim 10, wherein an encoding scheme is independently selected for each half-circuit associated with said connection.

17. The system of claim 10, wherein said processor is further configured to notify at least one of the devices associated with a connection of said change in the encoding scheme.

18. The system of claim 17, wherein said processor is further configured to insert a notification in a packet header indicating that subsequent packets will be encoded with a different specified encoding algorithm.

19. (Amended) A method for dynamically adjusting the bandwidth utilized by a plurality of applications, each of said applications communicating with an endpoint over a connection in a network, said method comprising the steps of:

receiving an encoding scheme indication for at least one of said connections during a call set-up phase based upon an encoding requirement of said application associated with said at least one connection, each of said applications having a different encoding requirement;

monitoring for an indication of a new encoding scheme for said at least one connection; and

decoding subsequent data with said new encoding scheme if said monitoring step detects a change in said encoding scheme.

20. The method of claim 19, wherein said indication is received if a network traffic level exceeds a predefined threshold.

21. The method of claim 20, wherein an encoding standard that provides a lower degree of compression is selected at times of lighter network traffic.

22. The method of claim 20, wherein an encoding standard that provides a higher degree of compression is selected as network traffic increases.

23. The method of claim 19, wherein said indication is received if a predefined network error characteristic is detected and an encoding scheme is selected that performs well under the observed network error characteristic.

24. The method of claim 19, wherein said indication is received for a predefined time period.

25. The method of claim 19, wherein an encoding scheme is independently selected for each half-circuit associated with said connection.

26. The method of claim 25, wherein said monitoring step evaluates a packet header for a notification indicating that subsequent packets will be encoded with a different specified encoding algorithm.

27. (Amended) A system for dynamically adjusting the bandwidth utilized by a plurality of applications, each of said applications communicating with an endpoint over a connection in a network, said system comprising [the steps of]:

a memory for storing computer-readable code; and

a processor operatively coupled to said memory, said processor configured to:

receive an encoding scheme indication for at least one of said connections during a call set-up phase based upon an encoding requirement of said application associated with said at least one connection, each of said applications having a different encoding requirement;

monitor for an indication of a new encoding scheme for said at least one of connections; and

decode subsequent data with said new encoding scheme if said monitoring step detects a change in said encoding scheme.

28. The system of claim 27, wherein said indication is received if a network traffic level exceeds a predefined threshold.

29. The system of claim 28, wherein an encoding standard that provides a lower degree of compression is selected at times of lighter network traffic.

30. The system of claim 28, wherein an encoding standard that provides a higher degree of compression is selected as network traffic increases.

31. The system of claim 27, wherein said indication is received if a predefined network error characteristic is detected.

32. The system of claim 27, wherein said indication is received for a predefined time period.

33. The system of claim 27, wherein an encoding scheme is independently selected for each half-circuit associated with said connection.

34. The system of claim 27, wherein said monitoring step evaluates a packet header for a notification indicating that subsequent packets will be encoded with a different specified encoding algorithm.

35. (Amended) A method for encoding a connection between a calling party and an application in a network, said system comprising the steps of:

establishing said connection, wherein said connection has a plurality of call segments between said calling party and said application, each of said call segments having a different encoding requirement; and

selecting an encoding scheme for each of said call segments based on said corresponding encoding requirement.

36. (Amended) The method of claim 35, further comprising the step of adjusting the encoding scheme selected for one or more of said call segments over time in response to the current needs of a given transaction being performed by said application.

37. The method of claim 35, wherein said application is a voice mail application and said selected encoding scheme is selected to record messages in a compressed format.

38. The method of claim 35, wherein said application is an interactive voice response (IVR) application and said selected encoding scheme provides improved quality for the calling party to IVR half-circuit when the IVR is performing speech recognition.

39. The method of claim 35, wherein said application is an interactive voice response (IVR) application and said selected encoding scheme provides higher compression for the calling party to IVR half-circuit when the IVR is recording a message.

40. The method of claim 35, wherein said application is a signal processing application and a new encoding scheme is selected for an adjustment to the volume of said connection.

41. The method of claim 35, wherein said application is a signal processing application and a new encoding scheme is selected for adjustment to the speed of said connection.